

## Metacognitions and Mental Health: Cross-Cultural Adaptation and Validation of the Metacognitions Questionnaire 30 (MCQ-30) in Depressive Patients

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### Abstract

**Background:** The MCQ-30 serves as a valuable instrument for examining metacognitive beliefs and mechanisms associated with persistence and vulnerability in mental health problems. A current study has highlighted the pivotal role of metacognitive beliefs, as evaluated using the MCQ-30, as an imperative interpreter of depression. This study aimed to adopt and cross-culturally validate the MCQ-30 for application in Pakistani depression patients while also validating the factor structure of the scale in a clinical population.

**Method:** This study used a purposive sampling technique and a cross-sectional design. Two hundred and seventy-five diagnosed depression patients (81 men and 194 women), ages ranging from 18 to 60 years ( $M = 24.65$ ,  $SD = 6.84$ ), were recruited from different hospitals in Rawalpindi and Islamabad, Pakistan, between May 2022 and October 2022.

**Results:** Confirmatory factor analysis (CFA) findings confirmed the original five-factor structure of the MCQ-30 to establish its robust construct validity and reliability in the Pakistani context. Additionally, the promising test-retest reliability and cross-cultural validity found in the present research make the instrument suitable for broader practice in an Urdu-speaking psychiatric population.

**Conclusions:** This study highlighted the strong internal consistency, reliability, and validity in Urdu of the MCQ-30 versions in the Pakistani clinical population. Additionally, it marks the inaugural instance of a reliable and cross-cultural validation version of the scale tailored for utilization in the Pakistani context, opening new avenues for research scholars and professional and clinical applications in the Pakistani context.

**Keywords:** Depressive Symptoms, Metacognitive Processes, Structural Validation Analysis, Metacognitions Questionnaire-30 (MCQ-30)

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## Background

Global health organizations have recently emphasized the importance of comprehending and addressing mental health issues on a global scale (Chisholm, 2007; Eaton, 2019; Mahdanian et al., 2022). International initiatives within the realm of mental health have made significant progress in promoting and upholding the human rights of individuals receiving psychiatric care. A specific emphasis has been placed on ensuring that patients have access to the highest standards of mental healthcare available (Mahdanian et al., 2022). The progress in this field hinges on the accuracy and dependability of measurement tools (Faija et al., 2020; Sharma et al., 2020).

Depression is recognized as a highly prevalent mental disorder that affects more than 320 million people, or approximately 4.4% of the global population (World Health Organization, 2022; Culot et al., 2022). In the past decade, there has been a growing interest in gaining a deeper understanding of the cognitive factors associated with depression. One of the major factors that has garnered enhanced attention is impaired metacognition, which affects a person's ability to reflect on and examine their own self or behavior (Culot et al., 2022; Trauelsen et al., 2016; Hoven et al., 2019; Rouault et al., 2018). In recent years, the concept of metacognition has become more prominent in both the development of psychotherapeutic approaches and fundamental research globally (Moritz et al., 2018; Moritz & Lysaker, 2018).

Metacognition is referred to as cognition about cognition, thinking about thinking, or knowledge related to how one's thinking or cognitive processes are controlled (Flavell, 1976; Bright et al., 2018). Nelson and Narens (1990) postulate that metacognition comprises two distinctive levels, such as the object and meta levels: the first object level, in which cognitive processes happen, and the second meta level, in which metacognitive processes are involved. The communication between these two levels is supported by monitoring and control operations. (Bright et al., 2018).

It is an advanced and innovative cognitive system that includes a person's self-awareness of their cognitive abilities and processes. It empowers people to deliberately regulate and control these cognitive systems (Irak, 2011). The Self-Regulatory-Regulatory Function model posited that mental health issues are developed through a consistent and negative thought pattern known as Cognitive Attentional Syndrome (CAS) (Wells & Matthews, 1994), which encompasses deleterious or dysfunctional coping strategies, threat monitoring, and ruminating or worrying (Nordahl et al., 2022; Norman et al., 2019; Lari et al., 2009). This model is triggered and controlled through metacognition, which also encompasses unhelpful procedural and

declarative information (i.e., beliefs) related to cognition. Moreover, the presence of dysfunctional metacognition without a CAS trigger can be seen and considered a sign of mental health vulnerability. Therefore, it is supposed that dysfunctional metacognition, including metacognitive beliefs, is the primary contributing factor and knowledge to a mental health problem (Nordahl et al., 2022; Wells, 2019; Bright et al., 2018; Martn et al., 2014).

Many recent studies have used the Metacognitions Questionnaire (MCQ-30) as a valid and predictive instrument for examining metacognitive factors, which are closely associated with mental health issues, especially depression. A similar previous study also found that metacognitive beliefs examined by the MCQ-30 revealed the most important signs of depression (Hagen et al., 2017). Furthermore, meta-analyses and systematic reviews have provided strong evidence of a significant positive association between metacognitive beliefs and symptoms of depression and other mental health problems, supporting the important predictions of the S-REF model (Sun et al., 2017; Rochat et al., 2017; Normann and Morina, 2018). Recently, most of the researchers have commonly used the Metacognitions Questionnaire. To examine dysfunctional metacognitive beliefs, including the thought that worrying and tension are uncontrollable (Wells & Cartwright-Hatton, 2004). The MCQ-30 encompasses thirty items that were developed to examine five attributes of metacognitive beliefs: 1) negative beliefs about the uncontrollability and danger of worry; 2) the need to control thoughts 3) positive beliefs about worry; 4) cognitive self-consciousness; and 5) cognitive confidence (Wells & Cartwright-Hatton, 2004).

Numerous studies have been carried out to evaluate the psychometric properties of the MCQ-30 in different samples. The five-factor-structure has been confirmed in different samples and cultural contexts, such as Turkey (Tosun & Irak, 2008), the United Kingdom (Spada et al., 2008), Korea (Cho et al., 2012), Poland (Dragan & Dragan, 2011), Spain (Ramos-Cejudo et al., 2013), Italy (Quattropani et al., 2014), Greece (Typaldou et al., 2014), Serbia (Markovic et al., 2019), Norway (Nordahl et al., 2019), the USA (Fergus & Bardeen, 2019), France (Baptista et al., 2020), and China (Zhang et al., 2020). Moreover, the five-factor structure of the MCQ-30 scale has also been validated in different clinical samples, such as persons with obsessive-compulsive disorder (Grotte et al., 2016), epilepsy patients (Fisher et al., 2016), and persons at high risk of developing psychosis (Bright et al., 2018). This study aimed to translate and cross-culturally validate the MCQ-30 into Urdu and establish its psychometric properties in Pakistani patients with depression.

## Method

### Research design

This study adopted a cross-sectional research design using a purposive sampling approach. It consisted of two phases: (1) a pilot study and (2) the main study. In the pilot study, the standard back-translation method was employed to establish test-retest reliability and its appropriateness for cross-language validation in Pakistani patients with depression (Anderson & Brislin, 1976; Hambleton, 1994). On the other hand, the main study was designed to examine the construct validity and internal consistency of the MCQ-30 in Pakistani culture.

### Instrument

#### Metacognitions Questionnaire-30

It was originally devised by Cartwright-Hatton and Wells (1997) to examine metacognitive beliefs. Its items were categorized into five subscales of metacognitive beliefs and thoughts; each subscale comprised six items. These categories of metacognition are as follows: (1) Positive beliefs about worry (2) Cognitive confidence (3) Negative beliefs related to danger and uncontrollability of thoughts or beliefs (4) Beliefs related to the need to control thoughts (v) Cognitive self-consciousness It employs a four-point Likert scale to score, ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores on each subscale demonstrate a tendency towards pathological metacognitive beliefs. The low scores on each scale show a lower level of pathological metacognition.

### Participants

This study was carried out in two phases. In the preliminary phase, fifty participants (25 women and 25 men) whose ages ranged from 18 to 22 years ( $M = 19.64$ ,  $SD = 5.4$ ) were enrolled at the Department of Psychology, Foundation University in Islamabad, Pakistan. These bilingual participants were proficient in both Urdu and English. They were recruited to examine the MCQ-30's cross-language validity and reliability. Afterward, in the main study, 275 patients with depression (81 men and 194 women), whose ages ranged from 18 to 60 years ( $M = 24.65$ ,  $SD = 6.84$ ), were incorporated from different hospitals in Rawalpindi and Islamabad, Pakistan, between May 2022 and October 2022. Inclusion criteria were followed for those volunteer participants who had a clinical diagnosis of depression and proficiency in Urdu, while exclusion criteria were also set to exclude patients who were not able to comprehend the instruments, had a lack of motivation, or were under the age of 18.

### Translation and Adaptation of Metacognition Questionnaire-30

The MCQ-30 cross-cultural validation, translation, and adaptation process followed a four-step standard back-translation method. The primary aim of this study is to develop a culturally

appropriate and conceptually relevant Urdu version of the MCQ-30. This study focuses on cross-cultural equivalence and is theoretical as compared to a literal word-to-word translation using the forward and backward translation methods (Anderson & Brislin, 1976). In the first step, three bilingual experts, knowledgeable in item writing and scale translation, carried out forward translations from English to Urdu language, highlighting content reliability, validity, and contextual sensitivity. A team of five multilingual professionals then examined the translations, ensuring contextual clarity and linguistic appropriateness. Three forward translations of the scale were matched to select the most appropriate items.

Later, three back translations of scale were employed to recognize discrepancies that were examined through the committee approach to ensure cultural relevance and conceptual equivalence. Finally, cross-language validation encompassed fifty bilingual university students, ensuring content validity equivalence among Urdu and English versions. The translated Urdu version was finalized and ready for the preliminary study following rigorous review and endorsement through the Foundation University's institutional ethical review board. After conducting a pilot study, the main study was performed on a separate sample of depression patients to establish construct validity.

### Procedure

This study was approved by the institutional ethical review board of Foundation University Islamabad, Pakistan, and was carried out in accordance with the guidelines of the American Psychological Association. This study used both translated and back-translated versions of the MCQ-30 for cross-validation with fifty students that were comprised into two groups and followed the guidelines of Brislin and Anderson (1976). In the initial examination, one group comprised twenty-five students who received and completed the translated Urdu version of MCQ-30, while the other group consisted of twenty-five students who also completed the back-translated English version of MCQ-30. After a fifteen-day interval, both groups switched and completed other versions of MCQ-30, with the first group now completing the back-translated English version and the second group utilizing the translated Urdu version of MCQ-30. This scientific back-standard method permitted the swift identification of any inconsistency or equivalence problems between the both translated Urdu and English MCQ-30 versions (Maneesriwongul & Dixon, 2004).

Cross-validation and internal consistency were evaluated for both the MCQ-30 versions in both the pilot and main studies. This study examined and established validity and reliability using different statistical analyses through the Statistical Package for Social Sciences version 20 to examine

test-retest reliability, construct validity, and inter-item total correlation. Moreover, confirmatory factor analysis was carried out to examine the goodness-of-fit (GFI) index of the MCQ-30's distinctive covert structure, with model fit indices examined against established standard criteria such as a root mean square error of approximation (RMSEA)  $< 0.08$  and a comparative fit index (CFI)  $> 0.90$  (Bentler & Bonett, 1980).

## Results

### Pilot Study

The cross-cultural validation of both the Urdu and English MCQ-30 versions was examined using a test-retest reliability analysis, as detailed in Table 1. Further, the internal consistency of both versions was evaluated employing inter-item total correlation. Pearson product-moment correlation was also used to confirm the association between overall scores and its five distinct subscales, including cognitive self-consciousness, positive beliefs about worry, negative beliefs about uncontrollability and danger, cognitive confidence, and the need to control thoughts. This analysis revealed that the Pearson correlation values exceeded a remarkable threshold of 0.81 in all subscales. Additionally, the Pearson correlation displayed a higher value of 0.87 for the overall total score. Particularly, all of these Pearson correlation coefficients exhibited a notably high level of statistical significance in the present study. This highlights the robustness and strength of the test and retest reliability, demonstrating a commendable level of consistency in both the Urdu and English versions of the MCQ-30 in overtime.

In Table 2, Cronbach's alpha was applied to examine the internal consistency of both the Urdu and English MCQ-30 versions in the student sample. This study's findings exhibited that the total score of the Urdu version reflected high Cronbach's alpha coefficient of 0.866, while the English version of the MCQ-30 revealed a Cronbach's alpha coefficient of 0.885. Further, the results also demonstrate that the item-total correlations of the Urdu MCQ-30 version ranged from 0.857 (Item-26) to 0.869 (Item-15), and the English MCQ-30 version ranged from 0.877 (Item-28) to 0.886 (Item-6).

The findings showed that the five subscale including measuring cognitive self-assurance, optimistic beliefs, cognitive self-consciousness, uncontrollability, danger, and the need to control thoughts, reflected a high Cronbach's alpha coefficient of 0.793, 0.841, 0.629, 0.804, and 0.668. Similarly, the English MCQ-30 version subscales exhibited coefficients of 0.818, 0.864, 0.643, 0.849, and 0.650.

### Main Study

The main study comprised two hundred and fifty patients with depression (male,  $n = 81$ ; female,  $n = 194$ ), aged between 18 and 60 years ( $M$

$= 24.65$ ,  $SD = 6.84$ ), with depressive symptoms, recruited from both private and public hospitals at the Psychiatry Departments of various hospitals in Rawalpindi and Islamabad, Pakistan, between May and October 2022. An important inclusion criterion was followed for including participants, as those who have a clinical diagnosis of depression were included in the present study. All participants were native speakers of Urdu and right-handed, proficient in both writing and reading the language. The final Urdu version of the MCQ-30 was administered to 275 depression patients. Item total correlation analysis of the Urdu version was used to check the internal consistency of the Urdu MCQ-30 version in depression patients. A CFA analysis was also applied to establish the construct validity of the Urdu MCQ-30 version in depression patients.

The results exhibit a statistically significant association between the overall scale items and the five subscale items in the depression patient sample on the Urdu MCQ-30 version. The findings showed that items of the Urdu MCQ-30 version displayed significant positive association with the overall scale. These findings highlight the high level of internal consistency of the scale and confirm its reliability and consistency for the depression sample.

### Confirmatory factor analysis

In Table 4, CFA was conducted to develop a comprehensive model of metacognitive beliefs in depression patients, examining whether the data supports the covert variables conforming to the five subscales of the Urdu-translated MCQ-30, including cognitive confidence, cognitive self-consciousness, positive beliefs, danger and uncontrollability, and the need to control thoughts. The aim was to examine the unique factors that characterized each item on the scale.

This model's results revealed the global fit indices for the Urdu MCQ-30 in depression patients, specifically validating and confirming the earlier developed five-factor structure. Additionally, we evaluated modification indices for the five-factor model as proposed by Perez Itziar Garmendia (2001). These modifications had a significant influence on the model fit ( $\chi^2 = 618.585/368$ ;  $df = 1.68$ ; CFI = 0.921; IFI = 0.923; TLI = 0.907; RMSEA = 0.05, 90% CI = (0.04, 0.05); ECVI = 2.9, 90% CI = (2.7, 3.5).

Moreover, Table 5 examines the factor loadings of each item along its subscales and overall scale. The factor loadings revealed the strength of the association between the items and overall scales and subscales, as elucidated by shared variances and constructs. Preferably, standardized values for ( $\beta$ ) that approach 1.0 are desired. This present model illustrated estimates ranging from 0.36 to 0.8, confirming the model's robustness, and overall goodness of fit.

**Table 1**

*Pearson's product-moment correlation coefficient, the mean, standard deviation, and test-retest reliability of both the Urdu and English versions of MCQU-30 in the student sample (N = 50).*

<b>MCQU-30</b>	<b>Test (English)</b>	<b>Retest (Urdu)</b>	<b>Correlation Coefficient</b>	<b>p-value</b>
<b>Cognitive confidence (Maximum Score: 24)</b>				
Mean	12.86	12.82	.82	.000
SD	4.03	3.86		
Range	6-30	6-30		
<b>Positive beliefs (Maximum Score: 24)</b>				
Mean	12.26	12.24	.86	.000
SD	4.16	4.17		
Range	6-30	6-30		
<b>Cognitive self-consciousness (Maximum Score: 24)</b>				
Mean	15.70	15.94	.81	.000
SD	3.05	3.06		
Range	6-30	6-30		
<b>Uncontrollability and danger (Maximum Score:24)</b>				
Mean	14.66	14.54	.89	.000
SD	4.51	4.31		
Range	6-30	6-30		
<b>Need to control thoughts (Maximum Score:24)</b>				
Mean	14.44	14.14	.83	.000
SD	3.53	3.61		
Range	6-30	6-30		
<b>Total (Maximum Score:120)</b>				
Mean	69.92	69.68	.87	.000
SD	13.41	12.78		
Range	30-120	30-120		

**Table 2**

*Reliability coefficient of the translated (MCQU-30) and the English version (MCQE-30)*

<b>Scales and subscales</b>	<b>MCQE(<math>\alpha</math>)</b>	<b>MCQU(<math>\alpha</math>)</b>	<b>MCQ-E (Item-total)</b>	<b>MCQ-U (Item-total)</b>
MCQ30-total (30 items)	.88	.86	.87-.88	.85-.86
Cognitive confidence (6 items)	.81	.79	.75-.82	.73-.80
Positive beliefs (6 items)	.86	.84	.82-.86	.78-.84
Cognitive self-consciousness (6 items)	.64	.62	.54-.63	.54-.64
Uncontrollability and danger (6 items)	.84	.80	.79-.84	.73-.79
Need to control thoughts (6 items)	.65	.66	.55-.64	.60-.71

**Table 3***Item total correlation for Urdu MCQU-30 version in patients with depression (N=275)*

	MCQU-30	CC	PBW	CSC	NBUD	NCT
	r	r	r	r	r	r
MCQU1	.40**		.60**			
MCQU2	.58**				.57**	
MCQU3	.48**			.45*		
MCQU4	.52**				.74**	
MCQU5	.36**			.46**		
MCQU6	.47**					.49**
MCQU7	.54**		.70**			
MCQU8	.43**	.80**				
MCQU9	.58**				.88**	
MCQU10	.42**		.86**			
MCQU11	.47**				.70**	
MCQU12	.48**			.58**		
MCQU13	.35*					.56**
MCQU14	.30*	.43*				
MCQU15	.57**				.45*	
MCQU16	.41**			.56**		
MCQU17	.40**	.76**				
MCQU18	.39**			.54**		
MCQU19	.47**		.69**			
MCQU20	.48**					.69**
MCQU21	.50**				.68**	
MCQU22	.47**					.65**
MCQU23	.51**		.79**			
MCQU24	.50**	.58**				
MCQU25	.41**					.65**
MCQU26	.63**	.76**				
MCQU27	.39**					.56**
MCQU28	.56**		.48**			
MCQU29	.55**	.78**				
MCQU30	.32*			.65**		

Note. PBW = Positive beliefs about worry; CC = Cognitive confidence; NBUD = Negative beliefs about uncontrollability and danger; CSC = Cognitive self-consciousness; NCT = Need to control thoughts.

**Table 4***Confirmatory factor fit indices*

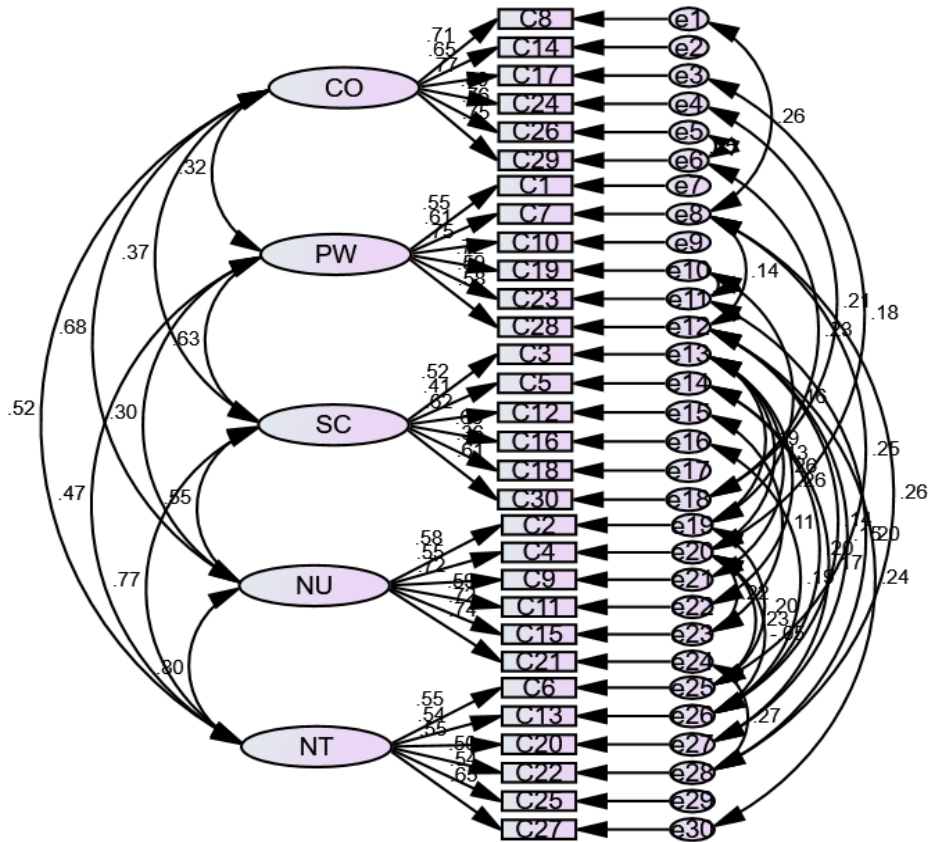
Scale and factor	$\chi^2$	df	$\chi^2/df$	CFI	IFI	TLI	RMSEA	RMSEA90%CI	ECVI	ECVI 90%CI
1(30 items)	899.07	395	2.28	.84	.84	.83	.06	.06(.07)	3.8	3.4(4.1)
2(30 items)	715.05	377	1.89	.89	.89	.88	.05	.05(.06)	3.3	2.9(3.5)
3(30 items)	618.58	368	1.68	.92	.91	.92	.05	.04(.05)	2.9	2.7(3.2)

**Table 5**  
*Factor loading of CFA for Metacognitions Questionnaire Urdu-30*

Sub-scales	Items	B	S.E.	$\beta$
CC	C8	1.00	-	.71***
	C14	.90	.09	.65***
	C17	1.13	.10	.77***
	C24	1.13	.09	.80***
	C26	1.10	.09	.76***
	C29	1.06	.09	.75***
PBW	C1	1.00	-	.55***
	C7	1.22	.16	.61***
	C10	1.51	.18	.75***
	C19	1.39	.17	.72***
	C23	1.12	.15	.59***
	C28	1.16	.16	.58***
CSC	C3	1.00	-	.52***
	C5	.78	.14	.41***
	C12	1.23	.17	.63***
	C16	1.31	.18	.66***
	C18	1.07	.22	.36***
	C30	1.24	.17	.61***
NBUD	C2	1.00	-	.58***
	C4	.94	.13	.55***
	C9	1.26	.14	.73***
	C11	.93	.12	.59***
	C15	1.31	.14	.72***
	C21	1.21	.13	.74***
NCT	C6	1.00	-	.55***
	C13	.97	.14	.54***
	C20	.99	.14	.55***
	C22	1.01	.15	.50***
	C25	1.01	.14	.55***
	C27	1.19	.15	.56***

*Note.* PBW = Positive beliefs about worry; CC = Cognitive confidence; NBUD = Negative beliefs about uncontrollability and danger; CSC = Cognitive self-consciousness; NCT = Need to control thoughts.

**Figure 1.** Path diagram depiction of the five factor varimax model along item loading from the CFA.





## Discussion

The primary purpose of the present study was to examine the psychometric properties and cross-cultural validation of the translated Urdu MCQ-30 in the Pakistani context. This study also aimed to examine the factorial structure of the translated MCQU-30 scale through CFA. CFA was chosen for its ability not just to give detailed estimates of error variance parameters but also for its exclusive capability to identify and rectify latent measurement inaccuracies. Therefore, the main aim of this study was to examine the reliability and validity of the MCQ-30 Urdu version among Pakistani depression patients. Moreover, this study also sought to develop the construct validity of the MCQ-30 using CFA, particularly in patients with depression.

The main objective of our study was the adaptation and validation of a Pakistani MCQ-30 version, with a coexisting study into its psychometric features in Pakistani patients with depression. The finding of the CFA confirm the original factor structure of MCQ-30 that was proposed by Wells and Cartwright-Hatton (2004). Notably, the scale established commendable internal consistency, validity and reliability. This study analysis demonstrated statistically significant item-total correlations in the MCQU-30.

This study's psychometric investigation lends significant confirmation to the validity of the formerly developed five-factor structure of the MCQU-30 to evaluate metacognitive beliefs in depression patients. Conversely, it is very important to highlight the dire need for an upcoming study to explore its generalization as a predictor of metacognitive beliefs in different psychological patients, including those with obsessive-compulsive disorders, anxiety, eating disorders, and substance use disorders. However, this study's finding of support with previous studies highlights the vital role of metacognitive beliefs in depression patients. As previous research has demonstrated, the detection of metacognitive beliefs scale holds promise in terms of psychological intervention and assessment (Nordahl et al., 2022; Wells, 2019; Bright et al., 2018; Hagen et al., 2017; Martn et al., 2014).

### Limitations and Recommendations

There are a lot of limitations to the present study. This research encompassed both patients facing depression who were getting psychological intervention like inpatients and those who were managing their condition like outpatients. However, it's worth observing that there were no significant differences between these two groups. Further investigations are required to develop the Urdu version of the MCQU-30's efficacy as a predictor of metacognitive beliefs in both outpatient and inpatient settings. Another very important drawback of the present research concerns the unequal gender

distribution of participants. The sample size of the present research was comparatively modest ( $N = 275$ ), with a lower representation of males ( $n = 81$ ) as compared to females ( $n = 194$ ). This uneven gender distribution may have introduced some influence that creates bias in the results, especially when making a comparison with the study by Cartwright-Hatton and Wells (1997), which had a higher proportion and representation of males ( $n = 164$ ) as compared to females ( $n = 142$ ). Subsequently, future studies are vital to ascertain whether the MCQU-30 could efficiently distinguish disorder-specific metacognitions.

This study opens up an intriguing avenue for upcoming research by evaluating whether the MCQU-30 holds the capability to discriminate metacognitive patterns that correlate with depressive disorders from those related to other mental health problems. It was also in dire need to examine this feature in upcoming research, which could yield valuable and useful insights into the clinical applicability and generalization of the MCQU-30 Urdu version.

### Conclusion

This study highlighted the strong internal consistency, reliability, and validity in Urdu of the MCQ-30 versions in the Pakistani clinical population. Furthermore, the MCQU-30 reveals standard robustness and reliability that make it a valuable instrument for examining maladaptive metacognitive beliefs in Urdu-speaking depression patients. This present research finding aligns with earlier studies recommending a five-factor structure, supporting the reliability and validity of the translated versions in the Pakistani context. The promising test-retest reliability and cross-cultural validity found in the present research make the instrument appropriate for broader use in an Urdu-speaking psychiatric sample, supporting related study findings. For future study, it is suggested to adapt and validate this scale in other languages and cultures to explore its applicability and generalization in examining metacognitive beliefs in patients with depression.

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### Ethical Consideration

The study was approved by Department of Psychology, Foundation University School of Science and Technology, Pakistan. Consent Form was taken before taking data and participants were asked to take voluntary participation.

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### Availability of data and materials

The data sets used and analyzed during the current

study are available from the corresponding author on reasonable request.

#### Authors' contributions/Author details

Sundus Khattak performed this study under the guidelines of American Psychological Association.

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#### Ethics declarations

#### Ethics approval and consent to participate

This study was approved by the Institutional Review Board of Department of Psychology, Foundation University School of Science and Technology, Pakistan. A written informed consent was obtained from all participants.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare to have no competing interests.

#### Additional Information

Not applicable.

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